TUNNELING SENSOR WITH LINEAR FORCE REBALANCE AND METHOD FOR FABRICATING THE SAME

ABSTRACT

A tunneling sensor ~~is disclosed having~~ has a pair of force rebalance capacitors that are used in a push-pull relationship so as to provide a rebalance force that is a linear function of applied rebalance voltages, which leads to an output voltage that is linearly related to input acceleration. The tunneling sensor comprises a plate electrode that is formed from and attached to a silicon substrate by a pair of torsional flexures, which provide an axis of rotation for the plate electrode. A pendulous mass is formed on a first end of the plate electrode, and a tunnel-effect contact is formed on a second end of the plate electrode. A pair of torque rebalance bridge electrodes are formed on the substrate so as to span the plate electrode. A tunnel-effect tip is formed on the substrate so as to be proximate the tunnel-effect contact and in line with the rotational path that the tunnel-effect contact takes when the plate electrode is rotated.

WEINGARTEN, SCHURGIN, GAGNEBIN & HAYES
TEL (617) 542-2290
FAX (617) 451-0313

Express Mail Number
EM259608383US